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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/675,642	09/30/2003	Patrick C. Herbert	02AB062	6060
7590	11/02/2005		EXAMINER	
Susan M. Donahue Rockwell Automation, Inc. 1201 South Second Street Milwaukee, WI 53204				ELLINGTON, ALANDRA
			ART UNIT	PAPER NUMBER
			2855	

DATE MAILED: 11/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/675,642	HERBERT ET AL. <i>(initials)</i>
	Examiner Alandra Ellington	Art Unit 2855

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on amendment filed on 8/10/05.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1,2,4-20 and 24-41 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) 1,2,4-20,24-29,41 is/are allowed.

6) Claim(s) 30-40 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some \* c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_

4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_

5) Notice of Informal Patent Application (PTO-152)

6) Other: Replacement drawing sheets

## Final Rejection

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 30 and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by Guckel (5,188,983).

a. With respect to Claim 30, Guckel discloses a microelectromechanical system (MEMS) strain gauge providing measurement of strain of an object, the strain gauge comprising: a substrate 31 having a surface attachable to the object; at least one flexible arm 34 having first and second ends attached to the substrate 31, wherein the arm 34 oscillates in response to a stimulus; and a detector communicating with the arm 34 for detecting a frequency of oscillation of the arm to provide a measure of strain of the object (col. 4 lines 45-55, col. 5 lines 40-52, col. 10 lines 42-68, col. 11 lines 1-22).

b. With respect to Claim 35, Guckel discloses the MEMS strain gauge as recited in claim 30, further comprising an actuator 110 capable of applying a force causing the flexible arm 88 to oscillate (col. 10 lines 64-68, col. 11 lines 1-5 {Fig. 23}).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 31-34 and 36-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guckel (5,188,983) in view of Lewis (5,583,290).

a. With respect to Claim 31, Guckel discloses a microelectromechanical system (MEMS) strain gauge providing measurement of strain of an object, the strain gauge comprising: a substrate 31 having a surface attachable to the object; at least one flexible arm 34 having first and second ends attached to the substrate 31, wherein the arm 34 oscillates in response to a stimulus; and a detector communicating with the arm 34 for detecting a frequency of oscillation of the arm to provide a measure of strain of the object (col. 4 lines 45-55, col. 5 lines 40-52, col. 10 lines 42-68, col. 11 lines 1-22). However, Guckel does not teach a detector with a capacitor plate interfacing with an arm. Lewis teaches a capacitor plate interfacing with an arm (col. 3 lines 65-67, col. 4 lines 1-30 {Fig. 2}). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Guckel with the teachings of Lewis to include a capacitor plate interfacing with an arm for the purpose of forming a capacitor in order to alter the capacitance (see Lewis, col. 3 lines 65-67, col. 4 lines 1-30 {Fig. 2}).

- b. With respect to Claim 32, Lewis teaches measuring capacitance across a capacitor plate and an arm (col. 3 lines 65-67, col. 4 lines 1-30 {Fig. 2}).
- c. With respect to Claim 33, Guckel discloses a means for calculating an oscillation frequency of the flexible arm (col. 10 lines 64-68, col. 11 lines 1-5 {Fig. 23}).
- d. With respect to Claim 34, Lewis teaches a flexible arm carrying a plurality of capacitor plate carrying a plurality of capacitor fingers 20,22 interdigitating with the capacitor fingers 20,22 of the flexible arm (col. 3 lines 65-67, col. 4 lines 1-30 {Fig. 2}).
- e. With respect to Claim 36, Lewis teaches the arm carrying a plurality of capacitor fingers 20,22, and wherein the actuator comprises a capacitor plate carrying a plurality of capacitor fingers 20,22 that are interdigitated with the capacitor fingers 20,22 of the arm (col. 3 lines 65-67, col. 4 lines 1-30,50-67, col. 5 lines 1-22 {Fig. 2}).
- f. With respect to Claim 37, Guckel discloses a momentary voltage is applied across the capacitor plate (col. 10 lines 50-59).
- g. With respect to Claim 38, Lewis teaches the capacitance across the interdigitated fingers 20,22 being sensed after the voltage is applied (col. 4 lines 11-30,40-47,50-67, col. 5 lines 1-22).
- h. With respect to Claim 39, Guckel discloses an oscillation frequency is determined based on the sensed capacitance (col. 10 lines 50-68, col. 11 lines 1-22).

- i. With respect to Claim 40, Guckel discloses the strain is determined based on the oscillation frequency (col. 10 lines 50-68, col. 11 lines 1-22).

***Allowable Subject Matter***

6. Claims 1, 2, 4-20, 24-29 and 41 are allowed.

The following is an examiner's statement of reasons for allowance: The reasons for allowance are based on the inclusion of:

- a. In claim 1, a first actuator connected to the beam to apply a force to the beam, an insulating bridge defined in the beam between the first actuator and the detector.
- b. In claim 13, a first actuator connected to the beam to apply a force to the beam, a microprocessor coupled to the detector to calculate the strain at the arm as a function of the amplitude of motion of the beam as it vibrates at the predetermined frequency.
- c. In claim 14, a microprocessor coupled to the detector to calculate the strain at the arm as a function of the resonant frequency of the arm.
- d. In claim 25, the method step of providing a momentary force to the beam with an actuator connected at a first point along the beam, the method step of measuring the frequency of vibration with a detector connected at a second point along the beam, the second point being electrically isolated from the first point.
- e. In claim 29, the method step of adjusting a displacement of the arm to maintain the vibration at a predetermined frequency, and determining the strain based on the amount of displacement.

***Response to Arguments***

7. Applicant's arguments with respect to claims 1, 2, 4-20 and 24-41 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(6,864,767)

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alandra Ellington whose telephone number is (571) 272-2178. The examiner can normally be reached on Monday - Friday, 8:30am - 5:00pm.

10. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on (571) 272-2180. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

11. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alandra Ellington 10/31/05

Art Unit 2855

  
MAX NOORI  
PRIMARY EXAMINER



Replacement Sheet

Approved by  
Examiner (an)  
10/31/05

1/3

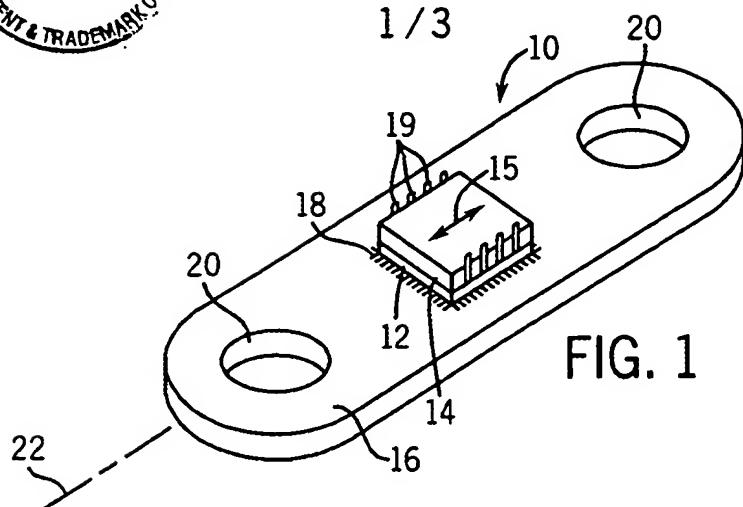


FIG. 1

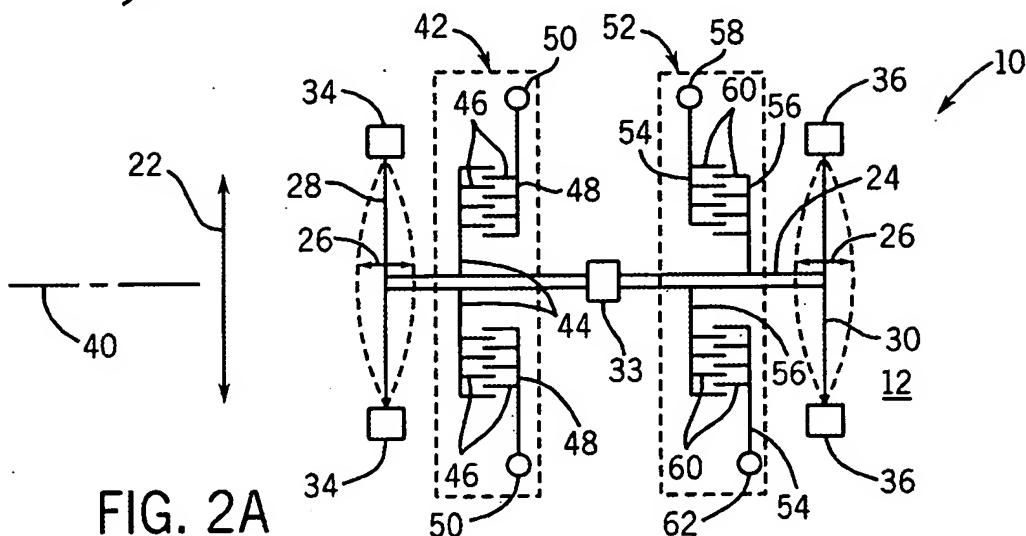


FIG. 2A

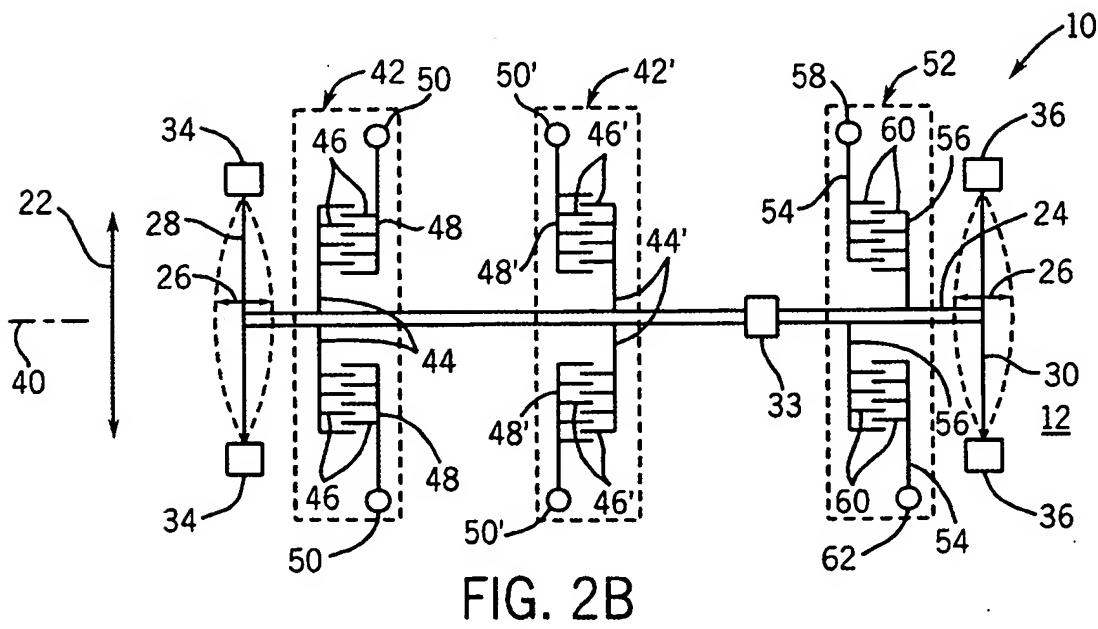


FIG. 2B

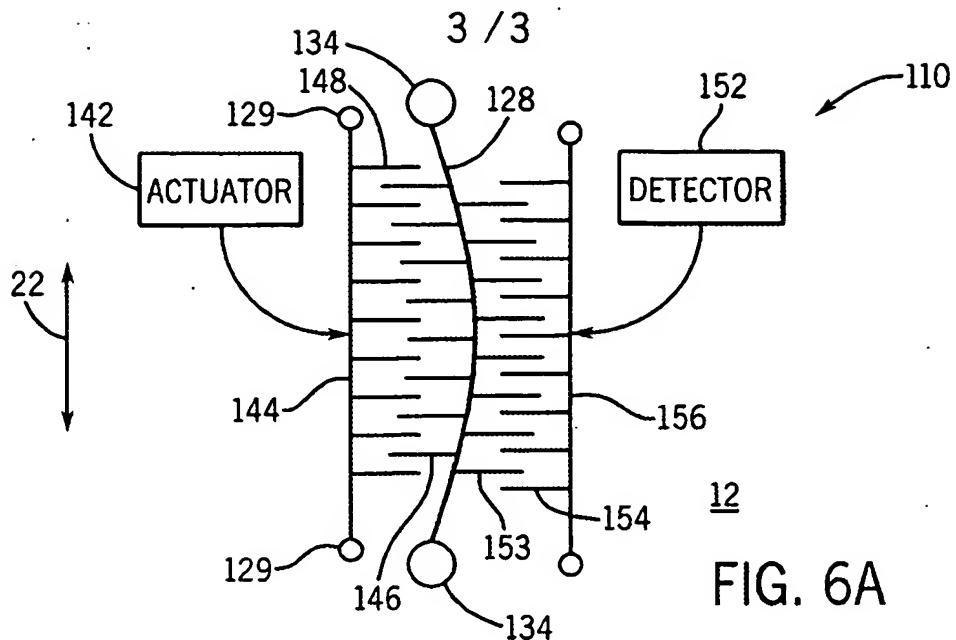


FIG. 6A

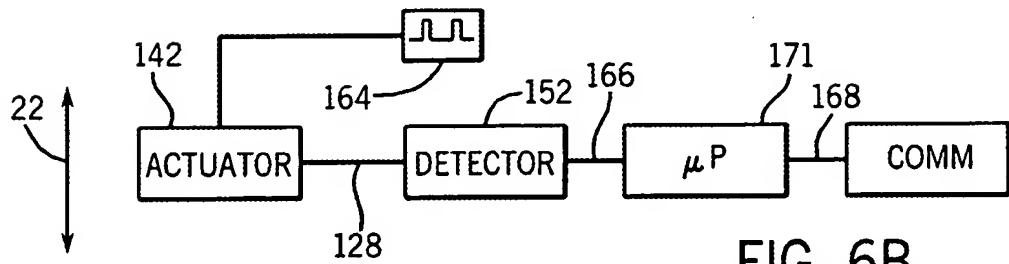


FIG. 6B

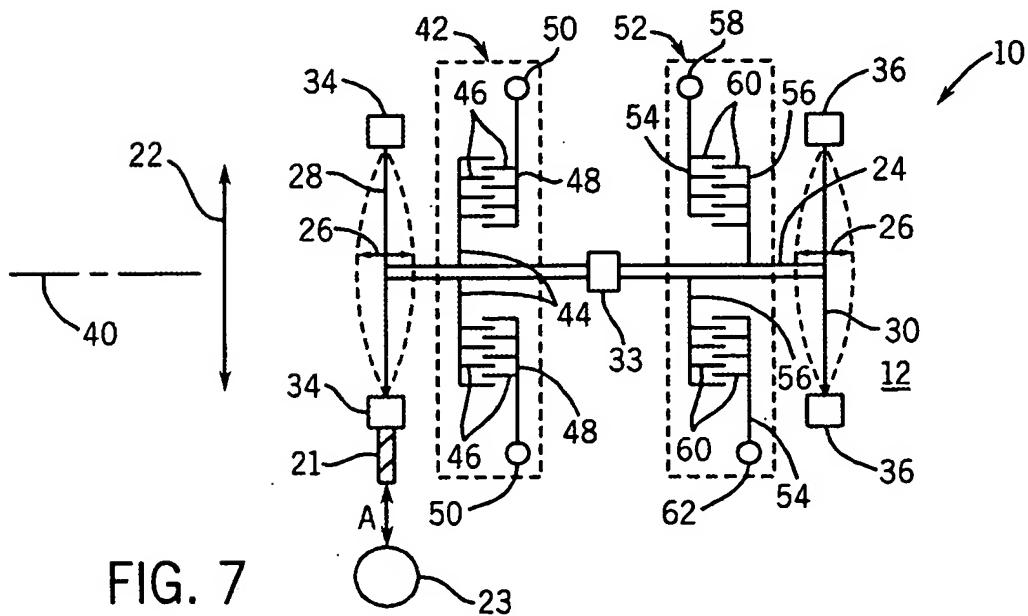


FIG. 7